



4E1- 4x10/100 Ethernet converter

HPC-4E1-4ETH

◆ SNMP managed 4E1 - 4 x 10/100 Ethernet converter with VLAN dot1Q support

➤ Features

For 4 E1 interface ports:

- Supports automatic removal and recovery of E1 channels that used for carrying payload. The E1 channels that have urgent alarm, such as LOS and LOF, or the Bit Error Rate (BER) exceeds $1E-6$, are removed automatically, and during this period, some Ethernet packets may be lost; It will be resumed when the fault dismisses;
- Supports the embedded E1 BER Tester function, to detect any E1 channel of 4 channels. When the embedded E1 BER Tester is used via CLI command, the particular E1 channel on testing mode can't convey E1 service, while the other E1 channels are not affected by the BER test;
- Jitter tolerance and jitter transfer characteristic compliant to ITU-T G.823.
- The differential delay between any two of the 4 E1 can be up to 220ms; when the factual differential delay exceeds 220ms, alarm is generated and Ethernet is cut off.



For 4 10/100 Ethernet Interface Ports:

- Provides up to 4 shared Ethernet interfaces.
- 1024 MAC address table and 5-minute aging time.
- Accepts frames with length between 64 and 1916 bytes (otherwise filtering).
- VLAN setting function based on tags compliant to IEEE 802.1Q.
- Throughout statistic of the Ethernet packets based on port, such as error packets.
- Configurable pause flow control .
- Optional optical Ethernet interface compliant to IEEE 802.3u 100BASE-FX standard (can communicate with remote optical transceiver) and electrical Ethernet interface compliant to IEEE 802.3u 100 BASE-TX standard.
- By default, 4 Ethernet ports are 10/100 BaseT Based, but fiber optical FX type ports are also possible with ranges up to 120 km.

For SNMP Professional Management Interfaces

- SNMP via RJ45 ethernet port.
- 4E1-4ETH network management platform based on SNMP.

Special features and compliances

- GFP-F encapsulation recommendation G.7041.
- Virtual concatenation(VCAT) and Link Capacity Adjustment Scheme (LCAS) recommendation G.7042.
- Ethernet to nxE1 mapping recommendation G.7043.
- Ethernet to single E1 mapping recommendation G.8040.
- Bandwidth is increased without damaging the Ethernet data, and can be decreased no injury through management;
- E1s in the local and remote sides can be arranged arbitrarily, such as, the remote E1 port 1 can communicate with local E1 port

- Supports bandwidth unbalanced usage – when some E1s cannot work properly (i.e. the bandwidth of the sending and receiving can be 2E1 and 3E1 respectively).
- Provides the E1 connection-ship between local and remote system (accessed via SNMP).
- E1 tributary signal loopback automatic detect and cut off; when some E1 signal is detected as looped back, it will be not employed for carrying payload temporarily, and when the loopback is broken, this E1 will resume to be used.
- Remote/local E1 loopback function will be convenient for E1 line(transmission system included) testing .
- Complete alarm which is selectable to be shown between local and remote. Historical & Current alarm databases.
- Single-board design with small dimension, 1U high and low power consumption.

➤ Introduction

4E1-4x10/100 Ethernet converter with GFP-F, VC (Virtual Concatenation), LCAS support and professional SNMP. Besides the basic idea of bundling 4E1 to get 8 Mbps via professional SNMP access to wide array of user friendly features are possible now.

HP4E1-FEC4 is the IP over TDM converter, which supports the conversion from MAC frames to 1–4 E1 lines. The maximum bit rate is 8 Mbps (4E1 lines). With different LAN card, E1 card and power card, it can meet various requirements and can be customized to fit your network needs. It not only provides alarms and status of the E1 line and Ethernet interface together with advanced management functions, such as, throughput statistic of the Ethernet, but also supports the Unification Network Management via SNMP. Compliant to international standards, the device can communicate with products from other manufacturers adopting the same standards.

4 Fast Ethernet interfaces operate in full or half duplex with flow control, the mode can be set or monitor by management software. Unit also has a multi-port bridging capability handling up to 5 bridge ports. The Bridge supports two modes of operation: VLAN-Enable and VLAN-Disable mode. In VLAN-Enable mode, it creates sub-groups of bridge ports within the bridge. Each sub-group is associated with a unique VLAN ID (VID). Frames containing a VID can be forwarded only between bridge ports which are members of the specific VLAN, enabling a total separation between different VLAN users within the same bridge; In VLAN-Disable mode, the bridge forward frames ignoring the VID.

VLAN can be configured via SNMP software.

➤ Specification

Electrical Ethernet Interface

Connector	RJ-45
Working mode	Auto - negotiation is the default setting
Standard	Complies with IEEE 802.3 and 10/100 Base-Tx Ethernet Protocol

E1 interface

Bit rate	2.048Mb/s \pm 50ppm
Code format:	HDB3
Impedance	75 Ohm (BNC),120 Ohm(RJ45)optional
Standard	Jitter transfer, Jitter tolerance comply with ITU-T G.703、G.704、G.823 recommendations

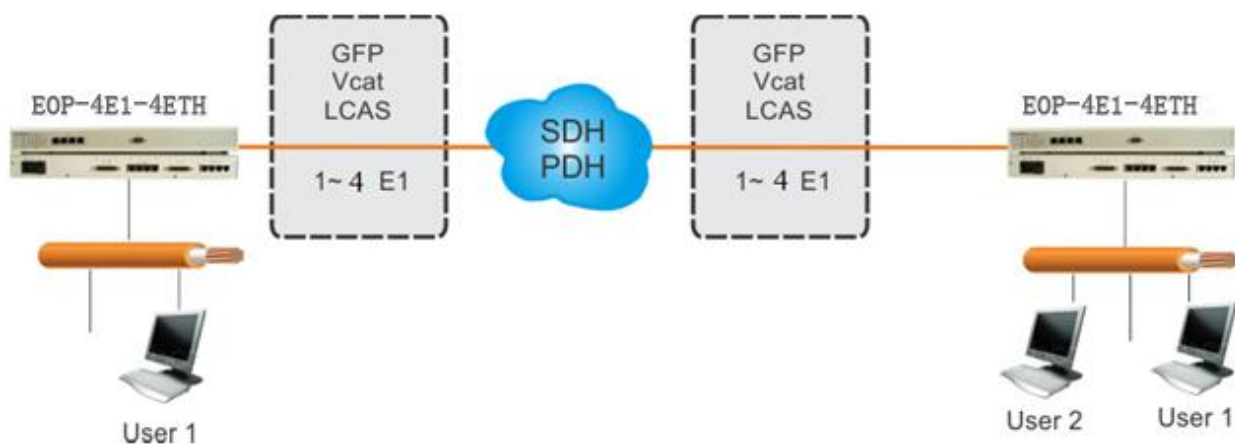
Ethernet related parameters

MAC address table capacity	1024
MAC aging time	5 min
Minimum frame-length	64 bytes
Maximum frame-length	1916 bytes
Working mode	Support auto-negotiation compliant to IEEE802.3u. Enabled as default
VLAN function	Disabled as default, you can set VLAN's from SNMP
Flow control	Enabled as default
Bandwidth	$\approx n \times E1$ ($n=0 \sim 4$) Default is $4 \times E1 \approx 8\text{Mbps}$
Physical	
Dimension	434mm×44mm×155mm (width×height×depth)
Weight	5kg
Power consumption	8W $\pm 10\%$
Power supply	DC 48V or AC96 -260V or DC&AC dual power
Operating temperature	-5℃ \sim 65℃
Storage temperature	-40℃ \sim 70℃
Humidity	$\leq 95\%$, free from condensing

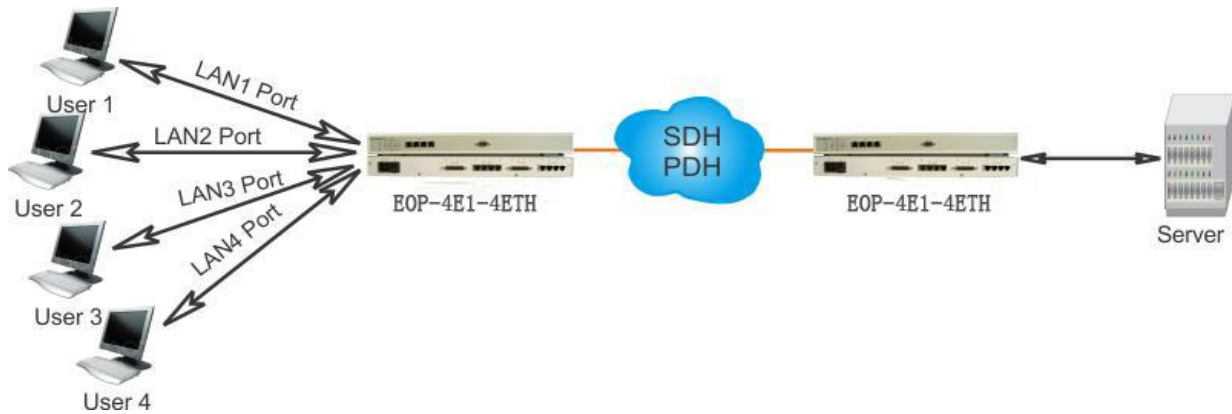
➤ Ordering Information

Model NO.	Description
HPC-4E1-4ETH	4E1(75ohm&120ohm),4*10/100BASE-Tx , SNMP manager,AC96-260,DC48V
HPC-8E1-4ETH	8E1(75ohm&120ohm),4*10/100BASE-Tx, SNMP manager,AC96-260,DC48V
HPC-16E1-4ETH	16E1(75ohm or 120ohm),4*10/100BASE-Tx, SNMP manager,AC96-260,DC48V
HPC-4E1-3ETH/Fx	4E1(75ohm&120ohm),3*10/100BASE-Tx+1*100M Fx, SNMP manager,AC96-260,DC48V
HPC-8E1-3ETH/Fx	8E1(75ohm&120ohm),3*10/100BASE-Tx+1*100M Fx, SNMP manager,AC96-260,DC48V
HPC-16E1-3ETH/Fx	16E1(75ohm or 120ohm),3*10/100BASE-Tx+1*100M Fx, SNMP manager,AC96-260,DC48V

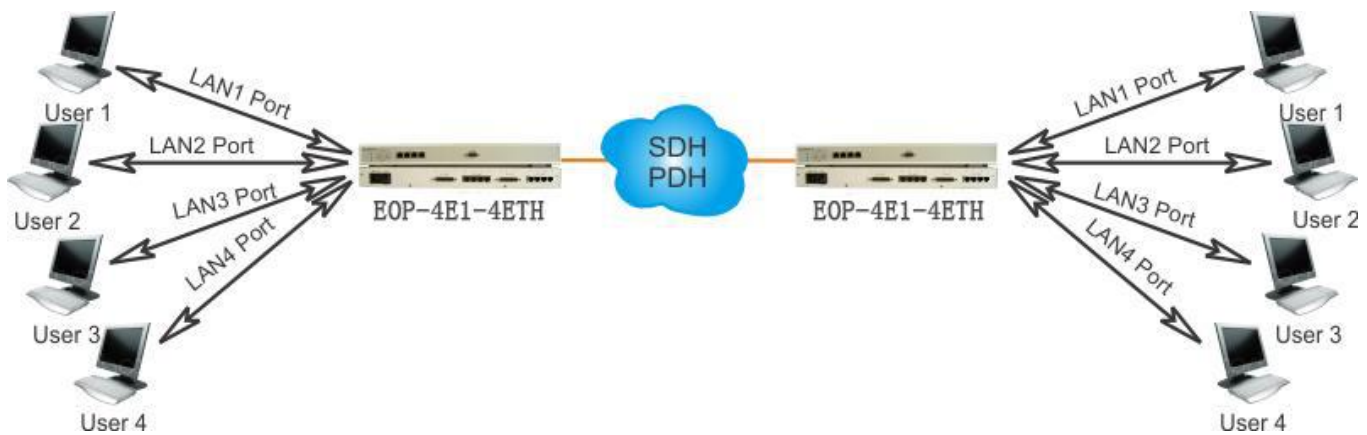
➤ Application



Device networking application - unit's are connected to using 4E1 lines directly to PDH or SDH network, and special interconnection features are possible at SDH level due to GFP-F, VC and LCAS technology support.



Access Server - Two HP4E1-FEC4 devices are connected via SDH or PDH transmission network interconnection. Using GFP and VC technology get together 1~4E1 and provide 4×2Mbps transmission channel bandwidth used to transport Ethernet services. Transmission channel bandwidth dynamic adjustment using LCAS technology. 'User 1' and 'User 2' can communicate with each other and are able to access to the 'Server', 'User 3' and 'User 4' can communicate with each other and are able to access to the 'Server', But 'User 1' and 'User 2' are isolated with 'User 3' and 'User 4'.



LAN interconnection:

1. User A1 only can communicate with User B1 for each other;
2. User A2 only can communicate with User B2 for each other;
3. User A3 only can communicate with User B3 for each other;
4. User A4 only can communicate with User B4 for each other.

➤ SNMP Professional Manager

